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THE ANALYSIS OF MILITARY MANPOWER ISSUES

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THE ANALYSIS OF MILITARY MANPOWER ISSUES

by

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INTRODUCTION

As in the past, we can be assured that the future will bring continuing debate about the adequacy of U.S. defenses and, indeed, their purposes. A major component of the debate concerns the provision, training, and capability of our military forces. Manpower issues were prominent during the presidential election campaign of 1972, when continuation of the draft was weighed against the introduction of a voluntary accessions system.

The manpower debate continues, of course; and it has other dimensions that receive less public prominence but are equally important. They pertain to such issues as the structure and adequacy of military compensation, the quality of training, the size and capability of the reserves, the appropriate retention rate for skilled manpower, the effectiveness and efficiency of the retirement program, and the like. As with the larger national security debate, the manpower debate proceeds against the backdrop of a large system in which change is incremental and slow, although there are notable exceptions, such as the introduction of the all-volunteer force (AVF). Here, as with the larger debate, there is a tendency to forget the institutional setting and, more important, to ignore the interrelatedness of the system while discussing any particular issue.

This paper provides an introductory description of the military manpower system and a context for discussion of changes to that system. Although the paper relies on some current and recent manpower policy issues for the sake of illustration, we do not prescribe or advocate particular policy alternatives. Instead, we emphasize the importance of

assessing the long-term, systemic implications of proposed policy changes. The tenor of those changes depends upon the actions of the institutional blocs of the military manpower system, which we take to be Congress, the White House, the civilian leadership in the Department of Defense, the uniformed services, and service personnel themselves. As we argue below, service personnel do not often participate directly in policy deliberations, but their prospective responses to policy changes tend to define the range of reasonable and effective policy actions. Beyond these blocs, there stands the larger reality that the values of society as a whole enter into the process of how our military forces are obtained, equipped, and managed. Consequently, proponents of changes in the manpower program must consider whether they will gain the necessary support of society.

Some Our orientation ~~is~~ *is* toward the objective, systematic evaluation of the costs and consequences of policy changes, *including* for both the defense system and society at large. Such an approach takes some of the excitement out of what are often emotional issues, but it is essential to informed debate.)

OUTLINE OF THE PAPER

→ The next section provides information on the size and composition of the armed forces, and demographic data on such factors as the sex, age, education, and race make-up of the forces. The following two sections discuss manpower requirements and selected aspects of the cost of military manpower. The next section discusses the institutional blocs and uses various manpower issues to illuminate their positions and

✓ preferences. The final section discusses some manpower policy alternatives bearing on four areas: compensation choices, the retirement system, skill mix and training, and institutional arrangements regarding accession and retention.

COMPOSITION AND DEMOGRAPHICS

As William Kaufmann has reminded us, deterrence and combat capability are the ultimate purposes for having a large standing armed force. Since World War II, the U.S. has maintained a force far larger than it was in the 1920s and 1930s. Table 1 shows that the force of 4.3 million active duty personnel at the World War I peak had shrunk to only 343,000 by 1920. That level remained roughly the same until the onset of World War II. By the peak in mid-1945, over 12 million people were on active duty. By 1947 the force had been reduced to about 1.6 million. As national defense strategy has evolved in the postwar period, the global basing of forces has remained important, and the threat from the USSR and, intermittently, from the People's Republic of China, have justified a large deterrence capability. Since the Korean War, the U.S. armed forces have ranged from 2 to 3 million personnel, with a transitory peak of about 3.5 million in 1969 during the Vietnam War. Since the advent of the AVF in 1973, the force has declined from 2.25 million to about 2 million. The Reagan Administration contemplates enlarging the force by 200,000 by 1986.

Table 2 reveals that the proportion of young men required by the services has dropped dramatically since 1960, as measured by the number of young men on active duty, ages 17 to 20, divided by the number of

Table 1
ACTIVE DUTY MILITARY PERSONNEL,
SELECTED YEARS, 1918-1979
(In thousands)

Period	Year	Total
World War I peak	1918	4,315
	1920	343
World War II peak	1945	12,124
	1947	1,583
Korea Peak	1952	3,685
	1955	2,935 ^a
Vietnam peak	1969	3,460
	1972	2,323
AVF era	1973	2,252
	1974	2,162
	1975	2,128
	1976	2,083
	1977	2,074
	1978	2,062
	1979	2,027

SOURCE: U.S. Bureau of the
Census, Current Population Series
25, *Selected Manpower Statistics*
FY1979, pp. 62-64.

^aCommand strength.

Table 2

MALE YOUTH AND ACTIVE DUTY MEN OF AGES
SEVENTEEN TO TWENTY, 1969-1979

Year	(1) Young Men on Active Duty Ages 17-20 (000s)	(2) Male Population 18 Years Old (000s)	Col. 1/ Col. 2 (%)
1960	644	1,323	49
1961	685	1,507	45
1962	732	1,424	51
1963	703	1,409	50
1964	638	1,398	46
1965	603	1,929	31
1966	930	1,729	54
1967	1,038	1,794	58
1968	983	1,791	55
1969	942	1,858	51
1970	780	1,913	41
1971	705	1,958	36
1972	565	2,005	28
1973	594	2,045	29
1974	553	2,069	27
1975	539	2,146	25
1976	523	2,150	24
1977	501	2,142	23
1978	468	2,136	22
1979	454	2,171	21

SOURCE: U.S. Bureau of the Census, Current
Population Series 25, *Selected Manpower
Statistics*, FY1979.

18-year-old males. The latter ratio provides a measure of the pool that feeds the flow into the military. In 1960 the proportion stood at over 50 percent, but it had fallen to 41 percent by 1970 and below 30 percent by 1972. This decline was largely driven by the increase in the pool of 18-year-olds, which rose from 1.262 million in 1960 to 1.913 million in 1970. That increase continued during the 1970s but at a much slower pace; the peak size of the pool came in 1970 (2.171 million). These demographics made the AVF feasible.

The male population will decline steadily until 1986, however, reaching a projected low of 1.783 million--an 18 percent drop from 1979. By 1989 it will grow to 1.895 million, which is on the order of 150,000 below the average prevailing in the 1970s.

It is possible that the demographic decline in male youth can be offset by acquiring more active duty women or by expanding the Department of Defense civilian workforce. Over the 1970s the percentage of women in the armed forces increased markedly (Table 3), largely because of a DoD policy to increase the number of qualified women in the face of growing difficulty in recruiting high-quality men. But the change also reflected changes in societal values and the shifting career objectives of young women. Whereas women constituted one in every 40 active duty personnel in 1973 (or 2.4 percent), that figure rose to one in 13 by 1979 (7.4 percent). Whether their numbers will be expanded in the 1980s remains to be decided. The same holds for the DoD civilian workforce and contract personnel, whose services often substitute for certain activities of the active duty force (for example, some administrative and maintenance activities). In 1979 there were one

Table 3

ACTIVE DUTY FEMALE PERSONNEL AS A PERCENT OF
ALL ACTIVE DUTY PERSONNEL, 1973-1979

Year	Total (000s)	Percent
1973	55	2.4
1974	75	3.5
1975	97	4.6
1976	109	5.2
1977	119	5.7
1978	134	6.5
1979	151	7.4

SOURCE: U.S. Bureau of the Census,
Current Population Series 25, *Selected
Manpower Statistics*, FY1979.

Table 4

DEPARTMENT OF DEFENSE CIVILIAN PERSONNEL

Year	Total Civilians (000s)
1973	1,133
1974	1,164
1975	1,131
1976	1,091
1977	1,065
1978	1,061
1979	1,036

SOURCE: U.S. Bureau of
the Census, Current Popula-
tion Series 25, *Selected
Manpower Statistics*, FY1979.

million DoD civilian employees, a decrease of 130,000 from the 1973 level (Table 4).

Some other trend lines with respect to the character of the force over time will assist in gaining perspective. For example, Table 5 displays the constancy of the relative size of the services since 1973.

In contrast, the reserve forces have shrunk dramatically and only recently have shown a modest increase (Table 6). While there may be continued hope for improvements in the strength of the reserves, it is not realistic to assume dramatic changes in force size in the future, given current accession and incentive policies.

Currently, just under 14 percent (one in seven) of active duty personnel are officers, a value that has held steadily throughout the 1970s (Table 7). The enlisted forces have tended to become more experienced over the decade (Tables 8 and 9). The median age of active duty males rose from 23.9 to 24.5 from 1973 to 1979. At the same time, the percent of the enlisted force with over four years of experience inched upward from 40 to 41 percent. The gradual climb in age and experience in part reflect lower attrition and higher retention rates of enlisted personnel.

Tables 8 and 9 remind us that a large portion of the active duty force is young and fairly inexperienced. About 25 percent of the force is between 17 and 20 years old, and about 60 percent (three out of five) have no more than four years of experience. In the civilian sector the frequency of job changing is greatest among youth, so the appearance of substantial turnover among junior military personnel is not wholly unexpected. Data show (Table 10) that of the 355,000 persons entering

Table 5

DISTRIBUTION OF ACTIVE DUTY PERSONNEL BY SERVICE
(In thousands)

Year	Army	Navy	Marine Corps	Air Force	Total
<i>Numbers</i>					
1973	801	564	196	691	2,252
1974	783	546	189	644	2,162
1975	784	535	196	613	2,128
1976	779	525	192	585	2,081
1977	782	530	192	571	2,075
1978	772	530	191	570	2,063
1979	759	524	185	559	2,027
<i>Percentage Distribution</i>					
1973	35	25	9	31	100
1974	36	25	9	30	100
1975	37	25	9	29	100
1976	38	25	9	28	100
1977	38	26	9	27	100
1978	37	26	9	28	100
1979	37	26	9	28	100

Table 6

RESERVE STRENGTH, OFFICER AND ENLISTED, NOT ON
ACTIVE DUTY, 1970-1978
(In thousands)

Year	Officers	Enlisted	Total
1970	686	2,953	3,639
1971	718	3,186	3,904
1972	752	2,959	3,711
1973	728	2,684	3,412
1974	715	2,349	3,065
1975	702	1,954	2,656
1976	697	1,686	2,383
1977	694	1,554	2,249
1978	664	1,445	2,109

SOURCE: U.S. Bureau of the Census, Current Population Series 25, *Selected Manpower Statistics*, FY1979, pp. 216-220.

Table 7

ACTIVE DUTY OFFICER PERSONNEL AS A PERCENT OF TOTAL
ACTIVE DUTY PERSONNEL, BY SERVICE, 1970-1979

Year	Army	Navy	Marine Corps	Air Force	Department of Defense
1970	12.6	11.7	9.6	16.4	13.1
1971	13.3	12.0	10.2	16.1	13.7
1972	15.0	12.4	10.0	16.8	14.5
1973	14.5	12.5	9.8	16.6	14.3
1974	13.5	12.3	9.9	17.2	14.0
1975	13.1	12.3	9.5	17.2	13.8
1976	12.6	12.0	9.8	17.0	13.4
1977	12.5	12.0	9.8	17.0	13.3
1978	12.7	11.8	9.6	16.8	13.3
1979	12.8	11.9	9.8	17.2	13.5

SOURCE: U.S. Bureau of the Census, Current Population Series 25, *Selected Manpower Statistics*, FY1979, pp. 71-73.

Table 8

MEDIAN AGE AND AGE DISTRIBUTION OF MALE
MILITARY PERSONNEL, 1973-1979

Year	Median Age	Age Distribution				Total
		17-20	21-24	25-29	30+	
1973	23.9	27.0	28.9	18.4	25.7	100
1974	24.0	26.7	28.4	19.0	25.9	100
1975	24.1	26.8	27.7	20.0	25.5	100
1976	24.2	26.8	27.1	21.0	25.1	100
1977	24.4	26.0	27.2	21.8	25.0	100
1978	24.3	24.6	28.0	21.6	25.8	100
1979	24.5	24.4	27.9	21.5	26.2	100

SOURCE: U.S. Bureau of the Census, Current Population Series 25, *Selected Manpower Statistics*, FY1979, pp. 100-103.

Table 9

PERCENT OF ENLISTED PERSONNEL WITH OVER FOUR YEARS
OF SERVICE, BY SERVICE, 1973-1977

Year	Army	Navy	Marine Corps	Air Force	Department of Defense
1973	34	40	27	50	40
1974	32	41	25	51	39
1975	34	44	25	52	40
1976	35	42	25	53	41
1977	37	42	26	54	41

SOURCE: U.S. Bureau of the Census, Current Population Series 25, *Selected Manpower Statistics*, FY1979.

Table 10

SELECTED PERSONNEL FLOW VARIABLES FOR ACTIVE DUTY
MALE ENLISTED PERSONNEL, 1973-1979

Year	(1) Total Accession (000s)	(2) First-term Attrition Rate ^a	(3) First-term Reenlistment Rate	(4) Career Reenlistment Rate
1973			26.1	82.2
1974	356	36.8	28.0	80.5
1975	369	35.1	36.3	82.3
1976	355	33.5	34.3	77.6
1977	333	---	35.9	75.3
1978	---	---	36.0	71.2
1979	---	---	33.9	67.2

SOURCE: Cols. (1) and (2), Defense Manpower Data Center tabulations; Cols. (3) and (4), U.S. Bureau of the Census, Current Population Series 25, *Selected Manpower Statistics, FY1979*, pp. 138-147.

^aPercent of accessions leaving active duty within 36 months of accession date.

active duty service in 1976, more than 33 percent had left the force within three years. And of the roughly 66 percent continuing to the point of first-term reenlistment, only about 33 percent decided to reenlist. By the time subsequent reenlistment points occur, the turnover rate has fallen dramatically. The final column in Table 10 indicates that 77.6 percent of those eligible to reenlist at the end of the second term, or high point, did so. By 1979, however, the rate had dropped to 67.2 percent. Needless to say, the trends alone tell nothing about whether they are desirable or undesirable, or about how to change them.

In every year since the beginning of the AVF, the services have been able to maintain the active duty force close to authorized size. Concerns about force quality have arisen over the past several years, however, first from field personnel who noticed increased difficulty in training new recruits, and then from the discovery that the aptitude test taken by all recruits had been misnormed. When the norming error had been corrected, it was found that more recruits fell into lower test score groups than had been thought. This can be seen in the large proportion of nonprior service personnel whose Armed Forces Qualification Test (AFQT) score placed them in "Category IV," which lies near the lower end of the range and forms the lowest test score category acceptable to the services. Table 11 reveals that 30 or more percent of the accessions from 1977 to 1980 were Category IVs. The problem was most acute in the Army, which took in from 44 to 52 percent Category IVs, figures well in excess of the anticipated numbers at the time of recruiting. Since the discovery of the AFQT norming error, the quality

Table 11

PERCENT OF NONPRIOR-SERVICE ENLISTED ACCESSIONS TESTING
IN AFQT CATEGORY IV, SELECTED YEARS, 1952-1980

Year	Department of Defense	Army	Navy	Marine Corps	Air Force
1952	39	44	33	43	33
1956	27	27	32	35	18
1960	14	17	7	16	12
1964	15	20	11	9	4
1968	25	28	17	22	17
1972	16	18	18	20	8
1974	10	18	3	8	1
1977 ^a	30	44	21	27	6
1979 ^a	30	46	18	26	9
1980 ^a	33	52	17	27	10

SOURCE: *Statement of Acting Secretary of Defense on Manpower, Reserve Affairs, and Logistics* (Robert A. Stone), February 24, 1981, p. 12.

^aThese percentages were computed so as to correct for the ASVAB norming error.

mix of recruits has improved. Enlistment contracts being written at present by the Army consist of under 25 percent Category IVs.

It is perplexing that such a significant error could go undetected for several years. For instance, one might have expected a concurrent decline in the educational attainment of the force, but there was little evidence of that. To the contrary, the education statistics that are routinely tracked by the DoD revealed a slight increase in the percent of enlisted personnel (first-term as well as career) who were high school graduates (Table 12). The figure rose from 87.8 percent in 1976 to 89.4 percent in 1978. In any case, the aftermath of the norming error yielded a rider to the fiscal year 1980-81 pay increase bill, which compelled the services as a whole to recruit at least 65 percent high school graduates and no more than 25 percent Category IVs during fiscal year 1981-82, and required each service to comply with these strictures in fiscal year 1982-83. Although these constraints would not have presented serious problems to the services in the past, they are more important today. That concern is driven by the declining size of the youth cohort, the worry that military compensation may not keep pace with the civilian sector, and the growing military demand for "high quality" recruits.

MANPOWER REQUIREMENTS

Each year the DoD issues a statement of manpower requirements. The requirements emerge from an assessment of the roles and missions of the services under various wartime scenarios, at one extreme, as well as an assessment of the workload associated with specific tasks (e.g.,

Table 12

ESTIMATED PERCENT OF OFFICERS AND ENLISTED PERSONNEL
BY EDUCATION LEVEL, 1973-1978

Year	Officers		Enlisted	
	Some College	College Graduate	High School Graduate	Some College
1973	93.6	82.0	86.2	15.8
1974	94.2	83.8	86.7	15.7
1975	95.0	86.2	87.4	16.6
1976	94.6	86.6	87.8	17.9
1977	96.1	88.3	87.8	18.5
1978	95.9	88.5	89.4	17.3

SOURCE: U.S. Bureau of the Census, Current
Population Series 25, *Selected Manpower Sta-
tistics*, FY 1979, pp. 107-108.

repairing a jeep) at the other. The planning process mixes these top-down and bottom-up approaches. As a result, the manpower requirements that emerge represent a blend of considerations, some based on subjective evaluations of how to cope with uncertain situations and others based on detailed, quantitative "manpower engineering" techniques.

Given the uncertainty about whether and where the next war will occur, whether it would be nuclear or nonnuclear, long or short, and so forth, the DoD statement of manpower requirements is problematical.

The services employ different but related techniques for determining manpower requirements. Broadly speaking, the process begins with a review of what the service is supposed to do under various wartime scenarios (its "missions") and how well different configurations of resources would accomplish the missions (its "capability"). The review provides guidance regarding the number and kinds of wartime combat and combat-support structures. For example, the services use scenarios to help judge the mix of units that would be effective in accomplishing specific objectives in the context of a scenario, and the judgment depends on assumed rates of attrition of men and material as the battle progresses. In some cases, simulation models are used to depict the course of utilization of military resources during an engagement; in other cases there is more reliance on individual opinion and historical analog. Working backward from a determination of the wartime requirement, the review gives peacetime support requirements, which depend on the desired surge capacity during mobilization and on peacetime workloads. Budget considerations also enter the planning

process, because the services must decide where to cut or where to add to their resources and capability in the face of defense spending changes. Indeed, much of the planning is incremental, with the current requirements carried over from previous years, implicitly indicating a continuity in both the nature of perceived threats and how to respond to them. Consequently, the changes that occur are largely evolutionary--for example, the gradual development of a rapid deployment force or the multiyear phase-in of new weapons systems. The determination of requirements includes not only what the services think they need in order to meet the mission requirements, but also the reality of what they think they can get and how much it costs.

The services also conduct detailed bottom-up planning. Here the focus is on the best way to man and equip a tank unit, an infantry battalion, a ship, or an air squadron. As an example of how the bottom-up process works, the Army relies on its Table of Organization and Equipment (TOE) to obtain the manpower and equipment levels for a tank unit to accomplish its wartime mission. The number of combat-type positions in the unit depend on tactical doctrine, desired firepower, and the number of weapons. Each weapon has a prescribed set of operators. Following this, the TOE supplies guidance on TOE service and support (such as mess, maintenance, supply). Depending on the environment in which the unit will be deployed, the number of combat and support personnel authorized for the unit may be modified, and so on. The authorized levels (which may differ from the stated requirement) are not always achieved; in a sense, they represent an upper boundary on the unit's resources, yet they have been constructed to assure that the unit can accomplish its wartime mission.

For purposes of personnel management, the peacetime manpower requirements in combat, service, and support activities are entered as data into an "objective force" planning model, which aggregates the data in various ways. The models can generate profiles of the objective force (that is, the desired force as built up from the peacetime requirements) by years of service and pay grade. These profiles can then be compared with profiles as predicted from the current, actual distribution of personnel, and thus reveal probable shortfalls or surpluses of manpower relative to requirements. The comparisons can be done force-wide or by selected occupational area. The objective force models can also be arithmetically manipulated to yield insights regarding the number of accessions required to meet future manpower requirements by years of service, pay grade, and skill. They can also produce simulations of the effects of alternative retention behavior and promotion opportunities. An example of such a model is the Air Force's Total Objective Plan for Career Airmen Personnel (TOPCAP).

If they do nothing else, such models lay out the preferences of the services with respect to the key characteristics of the force. They highlight the differences in the structure of the services as determined by differences in mission, doctrine, and manning philosophy. These objective force structures are useful in developing criteria for examining the value of proposed changes in incentives, recruiting, and the like. For example, if the services would like a more experienced force, it is useful to examine what incentives provide for increased retention and at what cost.

Perhaps the most difficult "demand" problem is determining the mobilization or surge requirement. Planning for mobilization depends heavily on the character of the conflict, for example, to what extent it calls for various types of personnel, whether prepositioned supplies are adequate, whether the conflict will be brief or protracted. For many scenarios, surge planning entails the constraint that the nation cannot add trained men to the force sooner than 20 days from the onset of conflict. Afterward, freshly trained recruits can augment the deployed forces. Consequently, mobilization planning pays heed to standing reserve forces, which can be called up to provide crucial buffer support. Moreover, the mobilization issue affords a major reason for having male youth register with the Selective Service System in order to avoid delay during a national emergency. Considering the uncertainty, complexity, and political difficulty of these issues, they receive inadequate attention.

During peacetime, manpower and equipment levels often fall short of authorized levels, which in turn are sometimes less than the formally stated requirements. Such shortfalls arise at the cost of reduced military preparedness but at a savings of resources freed for other purposes. Given the various techniques for determining requirements, and the constraints on resources, it is not surprising that judgments vary regarding the appropriate levels of authorizations and requirements. There is no right answer to meet all of the various contingencies, particularly since it is strongly probable that a future war would differ considerably from any of the contingencies.

The requirements determination process has occasionally been challenged on several technical, but nonetheless important, aspects. First, standard manning guidelines typically specify a single configuration of the number and skill levels of personnel for a given task, but other configurations (such as fewer but more highly skilled personnel) may be able to accomplish the same task. If they specified alternative configurations, planners would have more latitude in selecting the least costly one or in finding the one best suited to the existing (short-run) supply of personnel. Second, tradeoffs between equipment and men are possible; spare parts, for instance, can substitute for highly skilled maintenance personnel. Some logistics/manpower models recognize these tradeoffs, but until recently could not simulate them under wartime scenarios that involve variables reflecting the attrition of material, equipment failure rates, and repair times. Model results remain relatively weak inputs in the decision process.

THE COSTS OF MILITARY MANPOWER

This section reviews selected aspects of the costs of military manpower. We begin by examining manpower outlays as a proportion of the defense budget, followed by a review of the amounts spent on specific components of the manpower budget and a comparison of military versus civilian earnings.

Although much of the discussion will be descriptive, the principal point is that compensation can be an effective policy tool for shaping the size of the force as well as its skill and experience mix. Changes

in compensation change the attractiveness of military service, and that in turn affects recruitment, retention, individual performance, and the overall force profile. In many cases, the responsiveness of recruitment or retention to a change in compensation can be estimated with considerable accuracy; occasionally, the Office of the Secretary of Defense (OSD) uses controlled experiments for this purpose. These estimates can then be applied to evaluate the manpower consequences of alternative compensation policies. This procedure of quantitative estimation and prediction has been used successfully in predicting the results of different recruiting and retention incentives, ranging from across-the-board pay increases and bonuses to educational and retirement benefits. We should therefore keep in mind that the costs of military manpower can be viewed from different perspectives. By one perspective, the costs indicate the budgetary outlays associated with a force of existing size, skill, and experience. By another perspective, the costs can be thought of as an outcome of the process by which policymakers attempt to choose cost-effective modifications of the compensation package, and, in so doing, hope to improve the recruitment, retention, or performance of the force.

Manpower Costs in the DoD Budget

In the last few years, the cost of military manpower has increased in dollars, but has declined as a percentage of the DoD budget (Table 13). One reason for the decline is the increase in outlays for operations and maintenance from 28.8 percent of the defense budget in 1978 to 32.1 percent in 1980. A second reason is the increase in the

Table 13

FEDERAL BUDGET OUTLAYS FOR ACTIVE AND RESERVE
MILITARY PERSONNEL, 1973-1980

Year	\$ Billion	Percent of
		Department of Defense Military Budget
1973	23.2	31.7
1974	23.7	30.5
1975	25.0	29.4
1976	25.1	28.6
1977	25.7	26.9
1978	27.1	26.3
1979	28.4	24.7
1980	30.6	24.0

SOURCE: *Statistical Abstract of the
United States, 1980, Table 595, p. 368.*

cost of military retirement; the budget share grew from 6.0 percent to 9.3 percent over the same period. Of course, changes of even a couple of percentage points result in large dollar changes. For example, one percent of the fiscal year 1979-80 budget represented over \$1.25 billion.

Table 14 presents the components of military pay; it defines the primary components as regular military compensation (RMC), special pay, supplemental benefits, and other allowances. RMC consists of base pay, expenditures on food and housing, and a tax adjustment to account for the fact that the food and housing components of compensation are not taxed. Reaching nearly \$26 billion of the \$41 billion total, RMC dominates the other components of pay. Supplemental benefits are next in line at \$13 billion; however, \$9 billion takes the form of retirement benefits, which are deferred rather than current compensation. The \$35 billion for RMC and retirement pay leaves \$6 billion for the remaining categories, and close to \$4 billion of that goes toward medical care and the government contribution to Social Security. Special pay accounts for about \$1 billion, and the commissary and exchange and other allowances make up the remaining \$1 billion.

These components have been generally stable from year to year, because changes in military policy have been gradual since the advent of the AVF in 1973. In particular, the size of the active duty force has decreased only slightly since 1975, when the post-Vietnam manpower reductions were completed. The military pay scale has also been stable.

The pay scale is revised annually to maintain comparability with pay changes in the private sector. The authority for pay comparability

Table 14
ESTIMATED MILITARY COMPENSATION COSTS
(In \$ million FY 1978)

Category	Costs, FY 1979
Regular Military Compensation	
Base pay	\$17,311
Quarters allowance ^a	5,202
Subsistence allowance ^a	<u>1,925</u>
Total, Regular Military	\$24,438
Supplemental benefits	
Retirement benefits	10,149
Medical care	2,918
Government contribution to Social Security	1,027
Commissary and exchange	<u>435</u>
Total, supplemental benefits	14,529
Special pays	
Bonuses	283
Hazardous duty ^b	265
Sea duty	27
Medical personnel ^c	139
Other ^d	<u>150</u>
Total, special pays	864
Other allowances ^e	565
Separation payments ^f	<u>322</u>
Total, all categories	\$40,718

^aExcludes tax advantage.

^bFlying, submarine, parachuting, and demolition duty.

^cIncludes pay for physicians, dentists, veterinarians, and optometrists; medical officers' variable pay; and physicians' and dentists' continuation pay.

^dProficiency pay, foreign duty pay, diving duty pay, and personal money for flag and general officers.

^eIncludes uniform or clothing, overseas station, family separation, and dislocation allowances pay; also death gratuities, mortgage insurance, burial costs, and missing in action pay.

^fIncludes terminal leave, lump-sum readjustment, severance pay, and early-release pay.

between civilian employees and military personnel derives from the Rivers Amendment, sponsored by Mendel Rivers, Chairman of the House Armed Services Committee, in 1967. Under the Rivers Amendment, a pay index based on white-collar civilian employees serves as the basis for adjustments to the military pay scale. At first the adjustment was confined to base pay, but a subsequent revision permits both base pay and cash allowances for quarters and subsistence to rise by the same percentage as the index. However, the Secretary of Defense can channel as much as 25 percent of the base pay increase to quarters and subsistence allowances. Some recent military pay bills have taken an additional step by proposing that pay increases, which have typically been applied across the board, be targeted on selected pay-grade or years-of-service groups. For instance, the FY 1979-80 pay bill (authorizing an 11.7 percent pay increase for FY 1980-81) permitted the Department of Defense to reallocate up to 25 percent of the increase by grade and years of service. The pay of a careerist could thereby have been increased relative to the pay of a first-termer, which would help alleviate the suspected pay compression under the current pay scale and promotion structure. Still, the administration chose to apply the increase across the board; it was thought that military pay had not kept pace with the private sector, so a "catch-up" was in order at all pay levels.

Expenditures on food and housing amounted to \$6.9 billion in FY 1977-78, the payments being made both in cash and in kind. Military personnel living off base or in rental housing on base receive cash payments, and personnel living in nonrental housing on base, such as

barracks or bachelor officers quarters, receive in-kind payments; most junior and many unmarried personnel live in nonrental housing on base. The gradual aging of base housing facilities, many of which date from World War II, prompted the services to upgrade and replace them. Further, because of inflation and the widespread real estate boom in the U.S., off-base housing became increasingly expensive to military personnel during the 1970s. These developments helped spur passage of a more generous housing allowance in FY 1979-80, the so-called variable housing allowance (VHA). Under the VHA, military personnel can receive the difference between the average cost of nongovernment housing for individuals of a specific pay grade in a high-cost area of the U.S. and 115 percent of the cash allowance for quarters.

This benefit, which may turn out to be exceedingly expensive, reflects the standard problem with changes hurriedly passed because of "emergency" need. There is a strong tendency to underestimate their cost, both in the short and long runs. The VHA is the kind of innovative compensation that should have been subjected to experiment, or at least more gradual phasing, to find out how it would work, iron out administrative problems, and gain a better estimate of its cost.

Retirement benefits are the second largest component of military manpower costs. Of the \$10.2 billion paid to military retirees in FY 1978-79, over 80 percent went to nondisability retirees, who form the largest single group of beneficiaries (Table 15). Outlays to military retirees have grown at a remarkable pace since the 1950s, and their rapid rate of growth raises questions about the amount of future outlays and, more fundamentally, about whether the retirement system should

Table 15

MILITARY RETIREMENT BENEFITS BY CATEGORY
OF RETIREE, FY 1978-79

Category	Number	Total Benefits (\$ million)
Nondisability	976,500	\$8,313
Temporary disability	11,300	59
Permanent disability	141,000	1,029
Fleet reserve	97,800	673
Survivor benefit plan	57,600	190
Total	1,284,200	\$10,264

SOURCE: *FY1979 Department of Defense Statistical Report on the Military Retirement System*, p. 13.

Table 16

RETIRED OFFICERS AND ENLISTED PERSONNEL,
SELECTED YEARS, 1955-1979

(In thousands)

Year	Officers	Enlisteds
1955	87.3	93.5
1960	122.4	132.7
1965	193.6	287.0
1970	263.4	501.5
1975	330.0	713.9
1979	389.8	838.7

SOURCE: *FY1979 Department of Defense Statistical Report on the Military Retirement System*, pp. 6-7.

continue in its present form. Currently, the system provides for nondisability retirement after about 20 years of service. Fewer than 10 percent of entering enlisted personnel and perhaps 15 percent of entering officers can be expected to reach the 20-year point. The benefit amount depends on base pay (not RMC) at the time of retirement and rises from 50 percent of that amount, if retirement occurs at 20 years of service, to a maximum of 75 percent of base pay at 30 years of service. Cost-of-living adjustments are made twice a year to compensate for inflation, but current legislation proposes to make the adjustment annual. Unlike the practice of most retirement systems, no vesting occurs until completion of 20 years of service. On the other hand, active duty personnel who complete 20 years may begin receiving their benefits upon "retirement."

Outlays to military retirees grew steadily during the 1970s, from 3.6 percent of the defense budget in FY 1969-70 to 9.3 percent in FY 1979-80. That trend derives from still longer trends in the growth of the population of military retirees (Table 16). The number of retired officers grew by a factor of four from 1955 to 1979, and the number of retired enlisted personnel rose twice as fast. From roughly 100,000 each of retired officers and enlisteds in 1955, the beneficiary pool increased to about 400,000 officers and 800,000 enlisteds in 1979.

The volatility of end strength during 1935 to 1959, driven by manpower build-ups during World War II and the Korean War, bears little relationship to the smooth pattern of increase in retirees over 1955-1979, the period of retirement fed by the earlier years. Thus, large fluctuations in the size of the active duty force have not been

associated with fluctuations in the number of retirees, because the management of force size occurs predominantly among the first few years of service.

All active duty military personnel and their dependents are eligible for free medical care on base. Off-base medical care is covered by the military health insurance system, CHAMPUS, which for outpatient care has an annual deductible of \$50 per individual (or \$100 per family), a coinsurance rate of 20 percent, and for inpatient care has a small daily fee. As Table 14 shows, the cost of these medical benefits stood at \$2.9 billion in FY 1978-79. Viewed from the perspective of the individual, annual health expenditures in the civilian sector were then on the order of \$250 per person for insurance, plus direct outlays for medicine, physician visits, and the like. The military probably provided roughly the same value of care to its personnel, although a finer comparison would also consider such aspects as accessibility, range of services, and quality of care.

The military employs a variety of special pays to encourage recruitment or retention in selected skills, to compensate for hazardous duty, to adjust for high costs of living abroad, and for other purposes. For example, reenlistment bonuses were paid to nearly 25 percent of all active duty enlisted personnel in 1979. Hazardous duty pay, such as jump pay, sea pay, flight pay, and submarine pay, plus other special pays (including foreign duty pay, cost-of-living allowance, overseas housing allowance, and more) were received by about 40 percent of enlisted personnel in 1979. The military, then, makes wide use of bonuses and special pays to supplement RMC. In FY 1978-79 they amounted to \$864 million (Table 14), and their use has expanded since then.

With information on these various compensations in mind, we next compare the earnings of enlisted personnel with civilian sector employees. The comparisons provide a general idea of whether military pay is comparable to private sector pay, but, unlike the index used in implementing the Rivers Amendment, we do not limit the civilian sector to white-collar jobs.

Civilian Versus Military Earnings

Our comparisons use data from two surveys conducted in the spring of 1979: the May 1979 Current Population Survey and the 1979 Department of Defense Survey of Officers and Enlisted Personnel. Each of these data sets permits us to construct monthly earnings variables. The civilian earnings variable represents gross (pretax) monthly earnings of workers who are not self-employed. The definition of the military variable is more complex because of the many components of pay that must be considered. Still, we believe our military pay variable offers a reasonable indication of pay in the armed services, although with some limitations.

Our military pay variable consists of three basic components: regular military compensation, special pays, and reenlistment bonuses. RMC is constructed in two steps. First, using an individual's reported year of service and pay grade, we look up the person's base pay in the FY 1978-79 military pay table. Second, even though some personnel (especially those in the first term) receive quarters and subsistence in kind, we add to base pay the average reported cash allowances for

quarters and subsistence as computed from personnel receiving these in cash. This procedure assumes that the value of in-kind benefits equals the average cash allowance. Special pays are averaged in as reported. Bonuses, which are reported in a lump sum amount, are prorated to a monthly basis by assuming a 36-month term of reenlistment. Because that is the minimum term, the prorating procedure yields monthly bonus amounts that are biased upward. However, most reenlistments are for the 36-month term. Our military pay could also include some allowance for medical care, commissary and exchange privileges, the government contribution to Social Security, and other more minor factors. Also, the data unfortunately exclude enlistment bonuses, which, if included, would increase military pay in the 18-to-20 age range and to a lesser extent among higher age groups.

Table 17 presents average monthly pay by age group for white and black male high school graduates. The comparisons are limited to men with a high school education in order to control for differences in the educational composition by sector. About 70 percent of all enlisted personnel have a high school education (and no higher education), and the vast majority of these are graduates instead of GED diplomates. Because military personnel are disproportionately young, the first two or three age groups have the heaviest concentration of personnel. (About 50 percent of enlisted males are age 18 to 23 versus about 30 percent in the civilian sector, relative to the overall age range of 18 to 45 years.)

For whites, the ratio of military to civilian pay begins near unity, declines to 89 percent for ages 21 to 23, and gradually returns

Table 17

CIVILIAN AND MILITARY MONTHLY EARNINGS OF
MALE HIGH SCHOOL GRADUATES, 1979

Age	Civilian	RMC + Special Pays + Bonuses	Ratio, Military/ Civilian
<i>White Males</i>			
18-20	795	823	103
21-23	1,046	934	89
24-26	1,203	1,108	92
27-29	1,249	1,188	95
30-32	1,351	1,248	92
33-35	1,400	1,330	95
36-38	1,464	1,397	95
39-41	1,482	1,447	98
42-45	1,535	1,573	102
Average	1,261	1,081	86
<i>Black Males</i>			
18-20	632 ^a	837	132
21-23	842	969	115
24-26	1,039	1,053	101
27-29	987	1,186	120
30-32	1,091 ^a	1,275	117
33-35	1,195	1,382	116
36-38	1,321 ^a	1,416	107
39-41	1,121 ^a	1,488	133
42-45	1,144 ^a	1,481	129
Average	1,020	1,077	106

NOTE: Military-civilian comparisons are consistent by race--i.e., white with white, black with black.

^aCell has less than 30 people.

close to unity by the late 30s. For blacks, the pattern of relative earnings is about the same, but it begins with military blacks averaging 32 percent more than their private-sector black counterparts. The ratio then dips down to unity in the mid-20s and rises to about 130 percent by the late 30s. In other words, relative earnings of blacks distinctly exceed those of whites. These racial differences reflect black and white earnings differences in the private sector, for our data show (Table 18) that black and white earnings are about equal in the military, using earnings as defined above.

These comparisons do not control for many differences between the civilian and military terms of employment that might give rise to relative wage differences. In the military one wears a uniform, works within a formal hierarchy of command, rotates to different geographic locations (often without choice), risks going to war, and apparently works more hours per week. According to our data, the average civilian high school graduate works 42.5 hours per week, in contrast to 52.6 hours per week for military personnel (as reported in the Department of Defense Survey). Earnings comparisons could also be extended to whether the wife accompanies the husband in the military, the wife's employment opportunities, and her earnings.

THE INSTITUTIONAL SETTING

It is important to understand the institutional setting in which any change must take place. As with public policy issues, changes in military policy are often put into effect hurriedly to deal with critical problems that have arisen, without adequate consideration of

Table 18

COMPARATIVE MILITARY EARNINGS FOR WHITE AND
BLACK HIGH SCHOOL GRADUATES, 1979

Age	White	Black	Black/ White
18-20	823	837	102
21-23	934	969	104
24-26	1,108	1,053	95
27-29	1,188	1,186	100
30-32	1,248	1,275	102
33-35	1,330	1,382	104
36-38	1,397	1,416	101
39-41	1,447	1,488	103
42-45	1,573	1,481	94
Average	1,081	1,077	100

what the collateral effects may be. The preference functions of the various actors are important when considering possible changes. First, their preferences give insights into what the overall outcomes will be. The institutions, particularly the services, tend to view the changes in terms of their benefits and deficiencies in their own larger institutional setting. Second, the preferences of the various parties reflect their values and therefore reveal decision criteria, some of which are not explicit. Finally, the role of the various parties in any given issue will provide a strong indication of whether or not proposed changes will succeed.

The principal players in this discussion are four: the individual service member, the services, the administration, and Congress. We will discuss each of these, principally by illustration. We can illustrate the preferences of the parties with reference to a number of general policy issues: overall readiness and combat performance, emphasis on cost effectiveness, compensation, attrition and retention, and flexibility of choice and the quality of life.

The Individual

The individual plays a central, but often muted, role in the debate. Obviously, it is important that the system attract a range of qualified people to perform complex tasks, in peacetime as well as wartime. These people possess an array of talents and preferences. Their performance will change under different conditions (policies), but it is highly problematic how particular changes affect performance. It is not obvious that more is better, be it compensation or quality of

life, or, conversely, that hardship alone hardens people to face the rigorous tasks of the professional military.

The other three policy actors are continually concerned over how policy changes will affect military manpower performance, but none of them can foresee those effects with any great certainty, let alone mandate their achievement. As a result, the individual tends to act as a modifier of the policy proposals of the other three parties. Their prospective reactions to manpower policy adjustments control the limits within which changes can be made. Their reactions have the advantage of being measurable, however. One reason that a number of key issues, particularly compensation and such related personnel issues as rotation and quality of life, lend themselves to policy analysis is that individuals collectively respond to policy change in ways that can be predicted as well as tracked. This can be seen in measures of accessions, reenlistments, indiscipline, and the like. Consequently, their subsequent behavior, predicted or real, directly affects policy choices.

For example, the length of tour for a soldier in Germany is driven not only by the best military judgments about combat training and unit effectiveness, but also by indiscipline rates and morale factors, which have led the Army to move toward shorter tours in recent times. The arguments for shorter tours were made by senior unit commanders, not by personnel specialists, and were based largely on morale and discipline problems that arise toward the end of a lengthy tour.

A similar illustration involves the number of active duty military personnel who are married. That number has risen steadily over time,

particularly among first-termers. This argues for an increasing concern with amenities that are not necessary for single people. It can be seen directly in the Congressional proposals to reduce the number of dependents in Europe. Objectively, most policymakers would agree that dependents in Europe are a burden, but the services and each succeeding Administration have reluctantly opposed any changes in the current provision for accompanied tours, because they perceive a major reduction in career attractiveness from such changes.

The increasing concern over the reduction in continuation rates beyond first reenlistment is another illustration. The services, particularly the Navy, have experienced a significant loss of trained manpower in the middle years of service. The services have argued that these losses are due to inadequate compensation and can be cured by increases in pay and allowances. But the problem runs much deeper. The Zwick Commission found, and surveys indicate, serious disenchantment with the full range of characteristics of service life, beginning with the leadership of superiors, living conditions, rotation policies, and so on. At the same time, the services may be right, in the sense that increased pay and allowances may compensate for some of the other perceived inadequacies. The point is that a change in behavior, which is regularly measured, caused a policy shift.

In summary, while the individual is at the heart of both policy and policy changes, he is a relatively silent or at least an inarticulate participant in the debate. On the other hand, in many ways he is the most forceful participant because of measured behavior. The individual often defines the limits of policy change.

The Services

The services shoulder the obligation of meeting the overall mission requirements. The other institutions are also concerned with these objectives. But because these concerns are the very essence of their professional obligation, the services tend to be conservative in estimating what they require to meet any particular situation. They also strongly desire to have the ability to manage the force under as few constraints as possible. Consequently, they vigorously support increasing compensation and monetary benefits, because doing so will make service life more attractive and therefore will give the services greater flexibility in manipulating other personnel policies, such as rotation, promotion rates, and tour lengths.

On the other hand, the services show less sensitivity to cost-effectiveness than do the Congress and, certainly, executive branch civilians. By definition, cost-effectiveness means providing only those expenditures that are necessary to meet a defined requirement, whereas the services would far rather err on the side of increased expenditures--again, not because they are profligate, but because they derive added institutional benefits from these expenditures, and because they would like to have an added margin of safety.

The services of course hope to experience low attrition rates in the first term, but attrition rates rose markedly during the 1970s and have remained relatively high. The institution of the all-volunteer force was a powerful signal from Congress that the services were to reduce discipline problems. Throughout the Vietnam war, not only had the draft become a major political issue, but so had the disciplinary

measures adopted by the military. The large numbers of complaints from service personnel and their parents were politically unattractive to Congress. The services responded to these signals and to their own preferences by allowing attrition rates among first-termers to rise markedly, even though this practice is expensive. The services released more people as unfit for service and allowed people who were unhappy with military service to break their contractual agreements. Doing so resulted in fewer leadership problems, a marked reduction in the infrastructure needed to deal with disciplinary cases, and virtually eliminated complaints from Congress regarding military discipline. Although the services dislike high attrition, they have resisted attempts by the civilian leadership and certain elements in Congress to reduce attrition rates on cost effectiveness grounds.

The services' resistance to major retirement reforms is also instructive. Retirement reforms proposed by the Carter Administration were designed to increase the attractiveness of the service for people in the eight-to-twelve-year range, among other things. The proposals guaranteed grandfathering of all active duty people who entered up to the day of their enactment and, in fact, allowed first-termers to choose between the old system and the new. Coupled with an increase in attractiveness for those in their eighth to twelfth year of service were lower monetary penalties for leaving among those in the twelfth to twentieth year of service. The services argued that the pay proposal that accompanied the retirement changes was inadequate. But their fundamental concern had to do with losing the flexibility that they now enjoy because of the lock-in effect of 20 years of service. The

retirement reforms would have forced the services to make a host of other changes in personnel policies in order to maintain the attractiveness of service to personnel with 12 to 20 years of service. This was not the publicly announced reason for resistance, but it was the principal reason.

The services have been reluctant to switch from straight pay to bonuses. They place high value on the attendant benefits that go with increased across-the-board compensation even though it is demonstrably more expensive and less efficient. This can be illustrated by the recent introduction of a variable housing allowance (VHA). The services insisted that the VHA be provided outside the calculation of regular military compensation. They wanted the new benefits to be a true add-on that could not be traded off easily against other kinds of compensation in the annual budget proposals.

The Civilian Executive Leadership

For our purposes the Office of the Secretary of Defense and the Executive Office of the President can be treated as one actor, although one would never think so while involved in the process. At the executive level there is considerably more emphasis upon cost-effectiveness and cost trade-offs. In addition, there is a heavier reliance on numerical indicators of personnel system performance. This reflects the orientation of the actors at this level and also less commitment to the broader and less well-defined institutional concerns of the services. The annual cycle of program and budget development forces the services to focus on resource constraints and trade-offs.

Consequently, there is a heavy emphasis on attempting to create cost-effective personnel and compensation policies that will provide adequate performance measures at minimum costs. The emphasis on trade-offs is reflected in the defense budget itself, as well as in the broader process of establishing the President's total budget each year. It is not just that the executive leadership view the relative size of the various elements of the defense budget as choices within a fixed constraint, but also that they have a requirement to mesh personnel policies with related policies concerning the civilian work force. This is particularly true with respect to military-related agencies such as the Public Health Service and the Veterans Administration, but it is also true for the rest of the executive branch. This orientation is manifested in a strong preference for bonuses and other flexible pay devices, retirement reform, reduced attrition, and reduced rotation.

One added illustration should suffice. In the President's FY 1978-79 budget there was great pressure to hold down the compensation of government employees, both military and civilian, in accordance with the government's overall commitment to anti-inflation policies. The administration judged that this policy would not result in serious changes in personnel performance--a judgment that turned out to be true for civilians, but not for the military. In the context of its broader policies, the administration found it difficult to develop a rationale for decoupling military and civilian pay and allowing military pay to rise. At the same time there was a strong reluctance to abandon the legal mechanism that permitted military pay to rise each year at the same average as civilian wages, and thus, once again, make military pay

an annual political issue. While this reluctance was finally overcome, largely owing to pressures and actions of Congress, military pay increases came late and only after accessions and retention had deteriorated.

The Congress

Congress is the most difficult institution to discuss in summary. It does not speak with one voice, but some generalizations can be made. Historically, Congress has been reluctant to provide increased power to the Secretary of Defense in personnel matters, for example, enhanced power to manipulate the bonus system. At the same time, there is a continuing desire on the part of Congress to "do what's right for the troops," while, conversely, there is a reluctance to be perceived as wasting money on military expenditures. We are all familiar with the swings in national and Congressional mood that change these generalizations. Also, the armed services committees tend to view the uniformed services as their constituents in the conventional model of constituency politics in Congress. In addition, in the last decade, the debate over the effectiveness of the AVF has colored nearly every military compensation issue brought to the Hill. In each and every case there is an undercurrent of doubt and controversy over whether the measures proposed will enhance military capability and military personnel effectiveness, or whether they will continue merely to shore up a system that many consider inappropriate and unworkable.

Finally, there are numerous actors in the executive branch and Congress (such as domestic cabinet officials and social service

committees) who are not attuned strongly to the needs of the military personnel system, but are involved in implementing public policy choices that directly affect the system. Some policies are closely related, such as policies to improve benefits for veterans (which may in fact reduce retention). Others are more general, such as the introduction of the Comprehensive Employment and Training Act, other forms of youth employment activity, and the broadly based provision of grants and loans for higher education. And at the more general level of government, fiscal and monetary policies are concerned with controlling civilian wages and inflation while increasing civilian employment opportunities. Consequently, we need occasional reminders that the military manpower debate is not played out in isolation, but in the context of other social issues.

ALTERNATIVE APPROACHES FOR IMPROVED EFFICIENCY AND/OR LOWER COST

This section discusses several areas of interest in defense manpower policy, including compensation choices, skill mix and training, and alternative institutional arrangements for accessions. The discussion expands on the argument that policy decisions involve multiple criteria and that the consequences of one policy often bear on the workings of others. Because manpower policies are interrelated, it is prudent to gather as much information as possible on the expected effects of policy changes before they are implemented. When adequate information is not readily available, surveys and controlled experiments can provide valuable data for estimating the direction and magnitude of policy effects. When a range of options can be analyzed, the

information can be enormously valuable not only in shaping the most cost-effective policy, but also in gaining a sense of whether certain side effects are inevitable or avoidable.

Our three topical areas--compensation choices, skill mix and training, and alternative institutional arrangements for accessions--are themselves interrelated.

In textbook economics, workers receive a wage rate set by market forces through the interaction of supply and demand. Neither firm nor worker can affect the equilibrium market wage, as they are assumed to be only two agents among the many that compose the market. This notion contrasts sharply with the compensation practices of individual firms, especially firms employing more than a few workers. The firms use compensation as a management tool, shaping the terms of the compensation package to promote particular objectives, such as lower turnover of labor, greater assembly-line production, less absenteeism, higher motivation for achievement, and so forth. Thus, the simple market wage in the textbook model has been replaced by a multifaceted compensation package, and workers, rather than simply comparing one firm's wage with that of another, are viewed as evaluating the utility (personal satisfaction) of the firm's compensation package versus other firms' packages. This paradigm applies also to the armed forces. The reason is simple: The armed forces must compete with the private sector for labor. This fact imposes a discipline on setting the terms of military compensation, for the less competitive the military package, the greater the loss of workers to the private sector.

As discussed above, military pay is adjusted annually to keep pace with a pay index based on earnings of civilian white-collar workers. It is doubtful that the index adequately captures changes in fringe benefits as opposed to direct monetary compensation (wages and salaries). The importance of fringe benefits in the overall civilian compensation package has grown rapidly in the past decade, perhaps because of a growing demand for such "earmarked" compensation, and perhaps because it offers some tax shelter. In the past few years, a number of larger firms have introduced so-called "cafeteria benefit plans" in which the worker can select among different options for health insurance, dental coverage, pension plans, tax deferred annuities, and so on. In the meantime, except for the VHA, the military system not substantially altered the nature or level of its fringes. As a result, the military pay package may be less competitive than perceived from the pay-comparability adjustments; the discrepancy may be sizable in certain occupational areas where private sector fringes have advanced rapidly. Further, the retention consequences of fringe benefit discrepancies may depend on which benefits are at issue (for example, dental care versus educational benefits). To some extent, the military is making amends, as witness the proposed extension of dental care benefits to the dependents of active duty personnel. But the military benefit package is not evaluated against a comprehensive and quantitative understanding of what the private sector offers. (Only in the past few years has the federal government begun a systematic assessment of private sector benefit packages by means of surveys undertaken by the Office of Personnel Management.)

Another, long-recognized, rigidity in the military manpower system is the preference for port-of-entry hiring. Almost all accessions to the enlisted force are nonprior service youth with little labor force experience or skill. If experienced nonprior service workers in the private sector want to join the services, they face the same skill ladder as inexperienced workers and must begin at pay grades that may be well below their skill levels. In comparison, private firms typically hire at all skill levels and pay commensurately. This raises the question of whether the military pays a premium for its hiring policy. Experiments permitting the lateral entry of civilians could shed light on whether they are equally productive, motivated, and willing to follow orders; whether their retention is equally high; and whether they can be obtained at any significant saving of costs in the manpower system. It should be possible to determine, for example, whether it is cheaper to enlist a skilled mechanic and pay him enough to keep him than it is to recruit and train an inexperienced one.

The success of a lateral-entry accession program would hinge on another unique feature of military compensation relative to private sector compensation. Because the latter varies by occupation but military pay scales do not (apart from special pays and bonuses), one would expect the response to a lateral entry program to differ by occupational area. Indeed, the lack of pay variation across occupational areas in the military probably underlies some of the retention problems now occurring among midcareer personnel. As an antidote, some suggest modifying the pay scale to allow occupational pay differentials. But before accepting the wisdom of that suggestion, it

would be useful to know whether these retention problems (and personnel shortages) typically persist over time. If so, differential pay would probably relieve the shortages. Such is the case with medical officers, who do, in effect, have augmented pay; but in many other cases it is less clear how long the shortage will persist and what caused it. For instance, the commercial aviation industry has experienced wide swings in the demand for pilots and navigators, but the severest movements tend to be of short duration. The development of models to help predict these swings could aid the Air Force and Navy in managing their pilots. The question is how the management should be done--through training more pilots, stiffer penalties for attrition, or more pay? If pay for military pilots were permanently increased, they might be overpaid during slack periods in the commercial aviation industry. Ironically, sharp increases in the demand for pilots in the private sector might still occasionally create a harmful shortage in the military, even at the higher pay rate.

These problems of overpayment and underpayment would vanish under a system allowing an occupation's pay to vary freely with pay in corresponding occupations in the private sector. But such a system needs to define the "corresponding" occupations and to make pay adjustments in fairly short order. Moreover, it is by no means certain that workers would be content not knowing how much they would make from one period to the next. Introducing year-to-year flexibility in pay scales creates a new risk for military personnel, who presumably would demand higher pay in each period in order to remain as content as before. Besides, the character of the military career is so much

different from that of the conventional civilian environment that it is not simple to tailor a system for peace as well as for war; hence the continued resistance to the adoption of a sliding salary system.

These kinds of considerations lie behind the growing use of bonuses as a flexible means of meeting transitory shortages, while the substructure of RMC remains steady from period to period. But far too little is still known about the existence and size of persistent wage differentials between military and civilian personnel in given occupations to reach any convincing judgment about the cost-effectiveness of occupational premiums within the military.

The military retirement system's provision for vesting at 20 years of service is an incentive for active duty career personnel to remain in the service. The attraction of retirement pay increases as retirement nears, and it provides a strong incentive for personnel with 15 or more years of service to stay, even under unsatisfactory conditions: "It all counts on 20."

Because this incentive applies to less productive and more productive personnel alike, it is argued that the existing system unfortunately does little to remove deadwood from the force. Among others, the President's Commission on Military Compensation (PCMC) has proposed earlier vesting of retirement benefits in conjunction with a later start date of benefits (age 65 instead of end of service). These provisions would encourage personnel to leave rather than stay until their twentieth year of service. At the same time, more midcareer personnel (12 to 18 years) could eventually qualify for retirement benefits than under the current system, thereby increasing retention

among this important group. As a consequence of the increased retention behavior, the PCMC projected a decline in front-end accession requirements during the transitional phase from the existing system to the steady-state of the new system. Had the PCMC recommendation been adopted when proposed in 1978 (it was not), the decline in the accession requirements would have fortunately coincided with the decline in the size of youth cohorts--an opportunity that has now largely passed.

A key aspect that is absent from analyses of the retirement system is whether it is neutral with respect to quality--that is, does it tend to retain higher- or lower-quality personnel, or is it neutral? Advocates of earlier vesting suggest that it would encourage less productive personnel to leave earlier. The reason is that retirement benefits depend on pay grade; consequently, if two soldiers are at equal pay grades after, say 10 years of service, the less productive one has a lower expected pay grade were he to stay 20 years, and hence should have a stronger incentive to leave early. Whether it would work out that way may only be learned from further empirical analysis or experimentation. In particular, it needs to be determined whether the lower-quality soldier would stay on because he could expect lower wages, or no better wages, in the private sector. In addition, the services may be reluctant to release marginal performers who have made a career commitment.

Concern with the productivity of personnel carries over into the issue of skill mix and training. Pressure to review the appropriateness of the existing experience and grade profiles comes from various sources (the services, the Office of Management and Budget, the Office of the

Secretary of Defense, outside defense analysts) and at times may seem contradictory. For instance, on the basis of empirical work indicating that on-the-job performance rises with experience (years of service), the Defense Resource Management Study recommended further investigation of the possibility of moving toward a more senior force. Having a higher content of the force in the five-plus years of service range would, it is argued, reduce recruiting demands, lower training costs, and yield greater returns on the training that is given. Movement toward a more senior force would entail some redefinition of the job content associated with higher pay grades. Presumably, the higher enlisted grades (say E-5 through E-7) would become less oriented toward administration and supervision and more toward production-line activities. The implications of such changes on morale and retention remain unknown.

Pointing in the other direction, toward a less senior force, is the growing concern over retirement costs. As mentioned earlier, the retired population currently stands at roughly 800,000 enlisteds and 400,000 officers, and since the mid-1950s the enlisted portion has grown approximately twice as fast as the officer portion. Furthermore, the experience profile of the force indicates that once an enlisted person attains 10 to 12 years of service, the odds of making it to 20 (and thereby qualifying for retirement benefits) are very high. Thus a fear of ever-increasing outlays for retirees motivates the notion of trimming the senior force or changing the retirement system.

Clearly, the essence of the issue is who should be kept and for how long. It is complex for reasons deriving from the difficulty of

measuring an individual's productivity or the productivity of the unit to which he or she is assigned. Written and hands-on performance tests have had limited success so far. The Army has used them most extensively, but the other services have programs for developing them. Most testing to date has been confined to performance during the first term of service, so it is not an accepted conclusion that the same methods can be effectively applied to later terms (and higher skill levels), where supervisory and managerial activities gain prominence. Moreover, test development has dwelt on individual, not unit, performance. Little is known about how the composition of a unit (age, race, education, skill mix) affects the productivity of an individual, much less that of the group as a whole. Testing therefore should be extended beyond the first term, and to units, to establish a foundation for analyzing the skill mix of the force.

Assuming that accurate measures of productivity were found, the productivity gains of a more experienced force could be weighed against the costs of higher active duty compensation and greater likelihood of qualifying for and drawing retirement benefits. At the same time, it would be necessary to examine the implications of changing the force's skill mix for the objective force would have to be examined, the question being whether wartime capability would be enhanced or impaired. The compensation package would also have to be reviewed to see whether additional incentives for retention were required and, if so, how much they would cost. All of this would be necessary because the objective is not merely to increase the average experience level of the force, but to do so in a cost-effective way and without degrading force strength,

flexibility, and readiness with respect to surge and wartime requirements.

Turning to alternative institutional arrangements for meeting accessions requirements, those are several, including the AVF, a partial draft to meet shortfalls under a voluntary system, a full draft, a national service obligation, and others. By and large, these systems differ most obviously in their ability to meet first-term accession goals and, concomitantly, in their Department of Defense budgetary cost. Under the AVF, compensation must be high enough to attract the required recruits; bonuses aid in directing recruits to areas of potential shortfall. Under a partial or full draft, individual compensation can be less; eligible individuals, if drafted, have a legal obligation to serve, but should they choose not to, they face legal sanction. Under a national service obligation, military service would be one of presumably several alternatives for discharging, say, a two-year "debt" of service to the country. Like the partial draft, a system of national service could run in conjunction with the AVF (or for that matter, in conjunction with a partial draft).

Any system that does not pay individuals a wage commensurate with their opportunity wage will tend to have attrition and retention problems. These problems will be exacerbated if military service is compulsory instead of voluntary, but will be mitigated to some extent if the involuntary system has shorter obligatory terms of service and offers compensation above the opportunity wage. Hence, detailed comparisons of the advantages and costs of alternative procurement systems can be meaningfully done for specific system alternatives.

It is true that a draft should bring in personnel more socially and educationally representative of youth as a whole. Whether those drafted would be better soldiers and equally well motivated to serve remains debatable. However, restructuring the AVF recruiting goals and compensation package has the potential to accomplish the same objective. But uncertainties about the costs of maintaining a viable AVF remain, as well as uncertainties about its effectiveness. To the extent that costs arise from pressures to recruit more and higher-quality recruits, there may be options to mitigate those pressures. These options include increased use of prior service personnel and of Department of Defense civilian employees, manpower substitutes (such as additional spare parts in lieu of additional repairmen), weapon systems with lower manning and/or skill requirements for operation and maintenance, and compensation policies that improve the retention of midcareer personnel, especially those in critical specialties.

Conventional wisdom about the AVF versus other procurement systems suggests that their differences are concentrated in the first term of service. Put differently, regardless of the procurement mechanism, the traditional problems of managing the career force will remain. After all, the career force has always been voluntary, draft or not. But, unfortunately, this observation falls short of recognizing the differences in attrition, retention, and performance that may emerge across alternative systems. Barring major changes in the structure of compensation, non-AVF systems will likely experience higher attrition and lower first-term reenlistment; if so, accession requirements will increase. Under an involuntary system, an increase in accession

requirements will have scant effect on accession costs but will increase training requirements. Further, higher attrition and lower retention may hamper possible efforts to move toward an experience profile with more personnel in the five to twelve years of service range. Depending on the weight of arguments--such as that more sophisticated weaponry dictates longer tenure among military personnel, or that productivity rises fast enough with years of service to justify a more senior force --a more junior, conscripted force having greater attrition and turbulence could jeopardize force readiness and flexibility and worsen cost-effectiveness in the bargain. Putting the point more positively, the strategy for adapting a non-AVF system should specify the best way to use personnel who are likely to be around only for a short time. The strategy should also devise mechanisms that can give early indication of an individual's propensity to stay on active duty until the completion of the first term and beyond. One possibility would be stiff penalties for early departure, but that is unlikely to be politically acceptable. As noted above, another option is to restructure the compensation profile so that initial earnings are lowered and subsequent earnings are raised, thus providing greater incentive for personnel to stay to the end of their terms and to reenlist.

In conclusion, these issues highlight the basic themes of our argument: the complexity and systemic nature of the institutions, the important first-order and subsequent-order effects of policy changes, the crucial functions of analysis and evaluation, the opportunities for improvement, and the importance of the key actors to the overall outcome. The challenges of the coming years are difficult, but the

opportunities for meeting them are clearly within the limits of our resources and abilities.